

ABSTRACT

A microfluidic device for altering the flow of a carrier fluid containing a polymer, such that, the polymer can be positioned, aligned, or elongated. The device accomplishes these effects by directing the carrier fluid in a laminar flow into obstacles, or other fluids to
5 knowingly alter the path of the carrier fluid streamlines. These streamlines, in turn, apply fluidic drag forces against the polymer to manipulate it into a desired configuration. Other aspects of the device retain a polymer in an aligned or elongated state with crimps which prevent portions of the polymer from coiling. These structures utilize the natural concept of increasing entropy to allow small portions of an aligned or elongated polymer to return to a
10 high entropy, or coiled state, while retaining the majority of the polymer in a low entropy, aligned or elongated state for subsequent analysis or manipulation.